

US006041109A

United States Patent [19]

Cardy et al.

[11] Patent Number:

6,041,109

[45] Date of Patent:

*Mar. 21, 2000

[54] TELECOMMUNICATIONS SYSTEM HAVING SEPARATE SWITCH INTELLIGENCE AND SWITCH FABRIC

[75] Inventors: Douglas Ross Cardy, Plano; Ken

Rambo, Dallas; Carol Waller, Allen,

all of Tex.

[73] Assignee: MCI Communications Corporation,

Washington, D.C.

[*] Notice: This patent issued on a continued pros-

ecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C.

154(a)(2).

[21] Appl. No.: 08/580,712

[22] Filed: Dec. 29, 1995

[51] Int. Cl.⁷ H04M 7/00; H04M 3/00

379/201, 67.1, 210, 207, 216, 230, 93.05, 93.09, 93.15, 115, 121, 156, 196, 219,

220, 229, 242, 243

[56] References Cited

U.S. PATENT DOCUMENTS

4,201,891	5/1980	Lawrence et al 370/58
4,821,034	4/1989	Anderson et al 340/825.8
4,872,157	10/1989	Hemmady et al 370/60
4,893,302	1/1990	Hemmady et al 370/58
5,272,749	12/1993	Masek 379/216
5,327,486	7/1994	Wolff et al 379/96
5,329,520	7/1994	Richardson 370/16
5,418,844	5/1995	Morrisey et al 379/207
5,530,852	6/1996	Meske, Jr. et al 395/600
5,583,920	12/1996	Wheeler, Jr 379/88

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

WO 95/29564 11/1995 WIPO .

OTHER PUBLICATIONS

Elixmann et al., "Open Switching—Extending Control Archiectures to Facilitate Applications," *International Switching Symposium*, vol. 2, Apr. 23–28, 1995, Berlin, Germany, pp. 239–243.

Kabay et al., "The Service Node—An Advanced IN Services Element," *BT Technology Journal*, vol. 13, No. 2, Apr. 1995, Ipswich, Great Britain, pp. 64–72.

Mayer et al., "Service Net-2000: An Intelligent Network Evolution," AT&T Technical Journal, vol. 70, No. 3/4, 1991, Short Hills, USA, pp. 99-110.

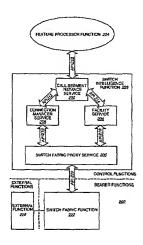
(List continued on next page.)

Primary Examiner—Fan S. Tsang Assistant Examiner—Allan Hoosain

[57] ABSTRACT

The present invention is a telecommunications system having separate switch fabric and switch intelligence. The system comprises a switch fabric, a switch intelligence, and a feature processor. The switch intelligence is logically separated from the switch fabric and comprises a switch fabric proxy, a facility service, a connection manager service, and a call segment instance service. The switch fabric proxy is coupled to the switch fabric via a vendorspecific first Application Programming Interface (API). The switch fabric proxy supports a second API, which is common across all vendors, representing functions supported by the switch fabric. A facility instance, which is instantiated by a facility service using a facility model, represents the bearer and signaling facilities of a party to a call, and interacts with the switch fabric proxy via the second API to communicate with the switch fabric. The connection manager service represents the connectors for a party to a call, and interacts with the switch fabric proxy via the second API to communicate with the switch fabric. A call segment instance, which is instantiated by a call segment instance service using a call model, represents the call logic and call data for a party to a call, and interacts with the connection manager service via a third API and with the facility instance via a fourth API. The feature processor interacts with the call segment instance via a fifth API to provide the telecommunications feature.

8 Claims, 5 Drawing Sheets



U.S. PATENT DOCUMENTS

OTHER PUBLICATIONS

5,608,446	3/1997	Carr et al 348/6
5,610,976	3/1997	Uota et al
5,619,557	4/1997	Van Berkum
5,619,562	4/1997	Maurer et al 379/201
5,661,782	8/1997	Bartholomew et al 379/67
5,712,908	1/1998	Brinkman et al 379/119

Shabana et al., "Intelligent Switch Architecture," Proceedings of the National Communications Forum, vol. 42, No. 2, Sep. 30, 1988, Chicago, USA, pp. 1312–1320.

Maruyama, "A Concurrent Object-Oriented Switching Program in Chill," IEEE Communications Magazine, vol. 29, No. 1, Jan. 1991, New York, USA, pp. 60–68.